

Customer No.: 31561  
Docket No.: 12539-US-PA  
Application No.: 10/708,428

**In The Drawings:**

Please amend FIG. 1B as shown in the attached amended drawing. The reference numbers "134a" and "134b" are cancelled. The reference number "130" is changed to "130b".

Please amend FIG. 4A as shown in the attached amended drawing. The reference number "440" is changed to "440a".

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### REMARKS

#### I. Present Status of the Application

Foreign priority is failed as applicant has not filed certified copy. Oath or declaration is defective. FIG. 1B is objected to as failing comply with 37 CFR 1.84(p)(5). Claim 3 is objected to because of some informalities. FIG. 1 is objected to The Office Action rejected all presently-pending claims 1-10. Specifically, the Office Action rejected claims 1, 6-8, and 10 under 35 U.S.C 112. The Office Action rejected Claims 10 are rejected under 35 U.S.C 103(a) as being unpatentable over Kroebel et al.(US Patent Application Publication 2005/0190856, hereafter, Kroebel et al.). The Office Action rejected claims 1-9 under 35 U.S.C. 103(a), as being unpatentable over Applicant's Admitted Prior Art (hereafter, AAPA) ,further in view of Kroebel et al..

Additionally, Applicant has found some errors in the specification and FIG. 4. Applicant has amended those typing errors. Applicant respectfully hopes Examiner will accept the amendments.

In response thereto, Applicant has amended the drawings and specification to overcome the objections of typing errors and 37 CFR 1.84(p)(5). Applicant has amended claims 3 to overcome objection of some informalities. Applicant has also amended claims 1,6-8, and 10 are amended to overcome rejections under 35 U.S.C 112. Furthermore, Applicant has amended claims 1-10 to overcome rejections under 35 U.S.C 103(a). After entry of the foregoing amendments, claims 1-10 remain pending in the present application, and reconsideration of those claims is respectfully requested.

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## **II. Priority, Oath or Declaration**

Foreign priority, oath or declaration is stated in the declaration annex.

## **III. Amendment of Specification**

The amendments in paragraph [008] are believed that no new matter is added. In FIG. 2 the reference number of the radio frequency amplifier should be "128", not "218". The phrase, "Although the design is able to detect a carrier leakage of a transmitter, but it also creates several problems." has one typing error, the word "but" should be removed to meet the formality of grammar.

The amendment in paragraph [032] is believed that no new matter is added. In the phrase "..., and the base band transconductance stage 430a and the switching pair 432b respectively.", "the base band transconductance stage 430a" should be "the base band transconductance stage 430b", (see FIG. 4A).

Above all, it is believed that these amendments do not add any new matter in the present invention, since these typing errors are obvious to be seen.

## **IV. Amendment of Drawings**

According to the OFFICE ACTION, FIG. 1B is objected as failing comply with 37 CFR 1.84(p)(5). In response thereto, Applicant has cancelled the reference numbers "134" and "134b". It is believed that this amendment do not add any new matter in the present invention, and the objection s failing comply with 37 CFR 1.84(p)(5) is overcame by the amendment.

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Furthermore, Applicant finds one typing error in FIG. 4A, the current sink 440 should be current 440a, the reference number "440" is replaced by "440a". It is believed that this amendment do not add any new matter in the present invention, since this typing error is obvious to be seen.

#### **V. Amendments of Claims**

Applicant has amended claims 1, 6-8 and 10 to overcome the rejection under 35 U.S.C. 112. Claims 2 and 3 are amended to overcome the rejection under 35 U.S.C. 103(a), and claim 4 is cancelled. It is believe that no new matter is added in the present invention.

#### **VI. Discussion of Office Action Rejection Addressed to Claims 1-10**

Examiner rejected claim 10 under 35 U.S.C 103(a) as being unpatentable over Kroebel et al., and Examiner rejected claim 1-9 under 35 U.S.C 103(a) as being unpatentable over AAPA in view of Kroebel et al..

With respect to claim 10, the independent claim 10 recites the features as follows:

10. A method for detecting and compensating a current offset for a transmitter, comprising:

enabling the transmitter;

receiving voltage signals and converting the voltage signals into current signals;

intercepting a current offset of the current signals before the current signals are modulated and transmitted; and

compensating the current offset within a predetermined time interval.

(Emphasis Added)

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Kroebel et al. do not teach **"compensating the current offset within a predetermined time interval"**. The limitation **"within a predetermined time interval"** is not disclosed, taught, or suggested in Kroebel et al.. Examiner said "[K]roebel et al. disclose **"trimming may be effected before a radio-signal is transmitted."**" Examiner also said "[t]his teaching imply that there is a wait period before transmission when the offset correction occurs". Applicant disagrees with the view of Examiner. Kroboel et al. only teaches **"trimming may be effected before a radio-signal is transmitted."**, and no place in Kroboel et al. teaches or implies **"there is a wait period before transmission when the offset correction occurs"**. That is to say no implication in Kroebel et al. implies **"there is a wait period before transmission when the offset correction occurs"**. Examiner did not explain why **"trimming may be effected before a radio-signal is transmitted."** implies **"there is a wait period before transmission when the offset correction occurs"**, either. Since there is no teaching, suggestion, or implication to get the step of **"compensating the current offset within a predetermined time interval"** in Kroebel et al., the step is not obvious for a person having ordinary skill in the art at the time. Furthermore, Kroebel et al. only teach **"trimming may be effected before a radio-signal is transmitted."**, that is to say the compensation for the current offset may effect the radio-signal before being transmitted. This does not imply **"compensating the current offset within a predetermined time interval"**. Thus claim 10 should be patentable.

With respect to claim 9, the independent claim 9 recites the features as follows:

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9. A method for detecting and compensating a current offset for a transmitter, the transmitter having a quadrature modulator including a base band transconductance stage, a switching pair and a current sink arranged therebetween, the method comprising:

enabling the transmitter;

turning on the current sink and turning off the switching pair for a predetermined time interval;

**compensating the current offset within the predetermined time interval;** and

turning off the current sink and turning on the switching pair after the predetermined time interval lapses. (Emphasis added)

Kroebel et al. do not teach **"compensating the current offset within a predetermined time interval"**. The limitation **"within a predetermined time interval"** is not disclosed, taught, or suggested in Kroebel et al., and Examiner did not explain why **"trimming may be effected before a radio-signal is transmitted."** implies **"there is a wait period before transmission when the offset correction occurs"**, either. Since there is no teaching, suggestion, or implication to get the step of **"compensating the current offset within a predetermined time interval"** in Kroebel et al, the step is not obvious for a person having ordinary skill in the art at the time. Thus claim 9 should be patentable.

With respect to claim 1, the independent claim 1 recites the features as follows:

1. A quadrature modulator, comprising:

a base band transconductance, for converting a voltage signal into a current signal;

a switching pair for modulating the current signal;

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a current sink, coupled between the base band transconductance and the base band transconductance, for detecting a current offset of the current signal, wherein when the current sink is enabled to detect the current offset of a transmitter within a predetermined time interval, the switching pair is disabled, and after the predetermined time interval lapses, the current sink is disabled and the switching pair is enabled. (Emphasis added)

Kroebel et al. do not teach "detect the current offset of a transmitter within a predetermined time interval, the switching pair is disabled, and after the predetermined time interval lapses". The limitation "the predetermined time interval" is not disclosed, taught, or suggested in Kroebel et al.. Examiner said "[K]roebel et al. disclose "trimming may be effected before a radio-signal is transmitted."" Examiner also said "[t]his teaching imply that there is a wait period before transmission when the offset correction occurs". Applicant disagrees with the view of Examiner. Kroboel et al. only teaches "trimming may be effected before a radio-signal is transmitted.", and no place in Kroboel et al. teaches or implies "there is a wait period before transmission when the offset correction occurs". That is to say no implication in Kroebel et al. implies "there is a wait period before transmission when the offset correction occurs". Examiner did not explain why "trimming may be effected before a radio-signal is transmitted." implies "there is a wait period before transmission when the offset correction occurs", either. Since there is no teaching, suggestion, or implication to get the feature of "detect the current offset of a transmitter within a predetermined time interval, the switching pair is disabled, and

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after the predetermined time interval lapses" in Kroebel et al., it is not obvious for a person having ordinary skill in the art at the time. Furthermore, Kroebel et al. only teach "trimming may be effected before a radio-signal is transmitted.", that is to say the compensation for the offset current may effect the radio-signal before being transmitted. This does not imply "detect the current offset of a transmitter within a predetermined time interval, the switching pair is disabled, and after the predetermined time interval lapses". Thus claim 1 should be patentable.

With respect to claim 2, the independent claim 2 recites the features as follows:

2. A transmitter, comprising:

a digital-to-analog converter module for receiving voltage signals;

a base band filter module, coupled to the analog converters module;

a quadrature module coupled to the base band filter module, for converting filtered voltage signals into current signals and then modulating the current signals;

a current sink module, coupled to the quadrature module and enabled for intercepting the current signals to detect a current offset before the current signals are modulated;

an offset compensation module, coupled between the current sink module and one of the digital-to-analog converter module, the base band filter module and the quadrature module, for compensating the current offset when the current sink module is enabled;  
and



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a radio frequency amplifier, coupled to the quadrature module, for amplifying the modulated current signals and then transmitting amplified signals to an antenna;

wherein the quadrature module further comprises a base band transconductance and a switching pair, and the current sink module is arranged therebetween; when the **current sink module is enabled within a predetermined time interval, and the switching pair is enabled after the predetermined time interval lapses.** (Emphasis added)

In FIG. 4A of the present invention, **"compensating the current offset when the current sink module is enabled"** is to compensate the current offset caused by each element or all elements, while in FIG. 1 of Kroebel et al., the DSP 3 only compensates the current offset caused by all elements. Thus the difference between the present invention and Kroebel et al. should be considered by Examiner. Furthermore, this difference between the present invention and Kroebel et al. makes the present invention is more adaptive than Kroebel et al.. Thus with this difference, claim 2 should be patentable. Additionally, the DC offset minimum loop 454b is not equivalent as the DSP 3. DSP 3 is a digital signal processing chip, which can be programmed by a user, and it processes digitally to compensate the current offset. The DC offset minimum loop 454b can be designed by digital circuits, analog circuits, or mixed mode circuits. Kroebel et al. did not teach the above statement. So this is the another difference between Kroebel et al. and the present invention. Thus claim 2 should be patentable.

Another one feature of claim 2 is **"detect the current offset of a transmitter within a predetermined time interval, the switching pair is disabled, and after the**

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**predetermined time interval lapses**". As stated above, Kroebel et al. only teach "trimming may be effected before a radio-signal is transmitted.", that is to say the compensation for the offset current may effect the radio-signal before being transmitted. This does not imply "detect the current offset of a transmitter within a predetermined time interval, the switching pair is disabled, and after the predetermined time interval lapses". Thus claim 2 should be patentable. Since claim 2 should be patentable, claims 3, and 5-8 being dependent on claim 2 should be also patentable.

It is believed that the foregoing amendments add no new matter to the present application. Applicant believes that these amendments place the claims in condition for allowance. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

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### CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-3 and 5-10 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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